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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/500,148

04/04/2005

Torbjorn Jacobsson

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EXAMINER

CHUKWURAH, NATHANIEL C

ART UNIT

PAPER NUMBER

3721

MAIL DATE

DELIVERY MODE

05/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/500,148

Applicant(s)

JACOBSSON ET AL.

Examiner

Nathaniel C. Chukwurah

Art Unit

3721

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>10/13/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites “and that the hammer-end of the hammer-piston is formed so that it sealingly cooperates with the drill bit bushing” in lines 14-15. It is unclear how the hammer end of the piston is again formed, the hammer end has been formed during manufacture, to strike the anvil.

Claim 7 recites “the hammer-piston is provided with a central axial channel which continuous in the drill bit over a foot valve, which is fastened in the drill bit and seals against the hammer-piston” in lines 1-4. The claimed limitation is unclear and confusing.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw (US 3,924,690) in view of Beccu et al. (US 6,062,322).

With regard to claim 1, the patent to Shaw discloses pressure-air driven percussion device (1) for a down-the-hole drill with a hammer-piston (3), axially reciprocally movable in a hammer-piston chamber as shown in the second Figure, through the system pressure considered to be a driving device, a slidable drill bit (6), an air cushion (col. 5, lines 50-54) for reducing percussive power.

Shaw's reference discloses the claimed subject matter except for forming the air cushion in a drill bit bushing between the hammer-end and drill bit upper end.

Beccu et al.'s reference discloses pressure-air driven percussion device (10) including a hammer end (16B), and a drill bit upper end (30 Fig. 1A) wherein the movement of the hammer in downward direction causes the hammer end (16B) to compress air (col. 5, lines 38-39), and a sealing effect is formed in the seal member (36) between the hammer end (16B) and the drill bit upper end (30) as shown in Figure 1B. In view of the teaching of the reference of Beccu et al., it would have been obvious to one skilled in the art at the time of the invention to modify the air cushion of Shaw with the arrangement of the hammer end, and a drill bit upper end and seal member of Beccu et al. in order to further reduce the impact of the

hammer on the drill bit and align the hammer with the drill bit in each downward operation.

With regard to claim 2, the modified percussion of Shaw includes the upper end portion of the drill bit sealingly and slidingly supported in the drill bit bushing as disclosed in the Beccu et al. (Figs.1A and 1B).

With regard to claim 3, the air-cushion of the modified Shaw is arranged to be formed in a volume defined by the upper end of the drill bit , the drill bit bushing and the hammer-end of the hammer-piston. See Beccu et al. (Figs.1A and 1B).

With regard to claim 4, the drill bit bushing of the modified Shaw is arranged to be supported by a housing (4) of the down-the-hole drill (1).

With regard to claim 5, the hammer-piston chamber as shown in the second Figure is formed by a housing of the down-the-hole drill (1).

With regard to claim 6, Shaw's pressure system considered to be the driving device includes a leakage passage (23, 24) for the pressure-air, through which a flushing position is established, and pressure-air is allowed to leak passed the driving device in far advanced positions in the percussion direction of the hammer-piston.

With regard claim 9, Shaw's downhole drill includes a percussion device as shown in the second Figure.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw (US 3,924,690) in view of Beccu et al. (US 6,062,322) as applies to claim 1 and further in view of Harrinton (US 5,131,476).

With regard to claim 7, modified reference of Shaw includes the hammer-piston of provided with a central axial channel (21), continuous in the drill bit except over a foot valve, which is fastened in the drill bit and seals against the hammer-piston. Harrinton's reference teaches a foot valve (30) for exhausting air pressure beneath the piston. In view of the teaching of Harrinton's reference, it would have been obvious to one skilled in the art at the time of the invention to modify the Shaw's percussion device to include the foot valve in order to exhaust air pressure beneath the piston.

With regard to claim 8, the Shaw would include the air-cushion being limited by the outside surface of the foot valve because the flange formed on the outer surface of the foot valve (Harrinbton Fig. 1).

Conclusion

6. Refer to attachment for notice of references cited and recommended for consideration based on their disclosure of limitations of the claimed invention.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathaniel C. Chukwurah whose telephone number is (571) 272-4457. The examiner can normally be reached on M-F 6:00AM-2:30PM.
8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rinaldi Rada can be reached on (571) 272-4467. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NC

May 23, 2007.



Rinaldi I. Rada
Supervisory Patent Examiner
Group 3700